International Civil Aviation Organization

WORKING PAPER

A42-WP/448
EX/199
29/7/25

ASSEMBLY — 42ND SESSION

EXECUTIVE COMMITTEE

Agenda Item 16: Environmental Protection – International Aviation and Climate Change

DEPLOYING SUSTAINABLE AVIATION FUEL: SUSTAINABLE CERTIFICATION WITH CORSIA ELIGIBLE FUELS AND ITS CO-PRODUCTS

(Presented by the Republic of Korea)

EXECUTIVE SUMMARY

The Republic of Korea is pursuing to expand the use of Sustainable Aviation Fuels (SAF) and promote its adoption by setting targets for mandatory use and preparing policies to foster market development.

On the production side of SAF, co-products that inevitably arise from the manufacturing process are being utilized as important means to achieve global carbon neutrality. However, in practice, the co-products of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) Eligible SAF are treated as conventional petroleum-derived products.

This paper explains that ensuring the mutual recognition of sustainability certification for co-products across national or regional systems can contribute to the development and expansion of the SAF market.

Action: The Assembly is invited to:

a) recognize that co-products arising from SAF production play a significant role together with SAF in the global market;
b) request the ICAO Council and Secretariat to review the importance of the SCS in ensuring the compatibility of SAF and its co-products, thereby enabling their appropriate valuation in the market; and
c) request the ICAO Council, with support and participation of Member States, to consider the positive impact of the SAF co-products on both SAF itself and other industries, and to incorporate this when establishing or operating policies and related certification systems.

Strategic Goals:	This working paper relates to the Strategic Goal – *Aviation is Environmentally Sustainable*.
Financial implications:	The activities referred to in this paper are expected to be undertaken within the resources available in the Regular Budget.

References:	ICAO Assembly Resolution A41-21 *Consolidated statement of continuing ICAO policies and practices related to environmental protection — Climate change* United Nations Framework Convention on Climate Change (UNFCCC), Subsidiary Body for Scientific and Technological Advice Fifty-ninth session (SBSTA59), Agenda item 12 (b): *Emissions from fuel used for international aviation and maritime transport Submission by the International Civil Aviation Organization (ICAO)* ICAO Global Framework for SAF, LCAF and other Aviation Cleaner Energies

1. INTRODUCTION

1.1 Since International Civil Aviation Organization (ICAO) declared its Long-Term Aspirational Goal (LTAG), it has made a series of efforts to achieve its greenhouse gas reduction targets. Among these, Sustainable Aviation Fuels (SAF)play the most critical role in helping the aviation industry meet its emission reduction goals. ICAO has been encouraging the rapid scale-up of SAF production, the development of policies to foster market creation, and the broad dissemination of such policies and support mechanisms.

1.2 The Republic of Korea commenced commercial production of SAF in 2024. To further expand SAF production, the public and private sectors are not only reviewing potential investments in new production facilities but is also actively utilizing existing infrastructure. In parallel, a variety of institutional mechanisms and policy measures, including incentives and mandates targeting SAF-related stakeholders, are being developed to facilitate the establishment of a domestic SAF market.

1.3 Globally, the demand for clean energy and sustainable fuels is rapidly increasing. Markets for not only road transportation fuels but also marine fuels and bio-naphtha, which serves as a key feedstock for the production of bio-based products, are being established through both regulatory mandates and voluntary initiatives as part of efforts to achieve global carbon neutrality.

1.4 To foster and expand the market, it is essential not only to provide incentives for SAF suppliers but also to ensure that SAF and its associated co-products, which result from the technical characteristics of the production process, are appropriately valued in the market. In particular, considering the limited availability of feedstocks, the harmonized use of SAF and its co-products should be taken into account.

1.5 This working paper aims to present key considerations for Member States, including the Republic of Korea, that seek to utilize existing refinery infrastructure or invest in new SAF production facilities. These considerations are intended to support the institutional use of SAF and its associated co-products, and to contribute to the development of the SAF market.

2. TECHNICAL CHARACTERISTICS OF SAF PRODUCTION

2.1 From a technical standpoint, the production of SAF inevitably generates co-products in addition to SAF itself. These co-products vary depending on the feedstock and processing method, but commonly include gaseous substances, diesel, or naphtha. These co-products contain bio-based components or a sustainable share derived from the original feedstock. While SAF producers primarily aim to produce SAF, the simultaneous generation of co-products means that SAF production should not be viewed solely as a means to supply fuel for the aviation sector. Rather, it should be recognized as a valuable tool in addressing

carbon neutrality challenges across other sectors such as ground transportation, maritime shipping, and the bio-refining industry.

2.2 These co-products are used both to comply with renewable fuel mandates and in voluntary markets. For example, under mandatory schemes, the Republic of Korea plans to introduce 8% biodiesel by 2030, while the European Union requires that 29% of transport fuels be renewable by the same year. The International Maritime Organization (IMO) also recognizes bio-marine fuels as a key tool for reducing greenhouse gas emissions in the maritime sector. Among the co-products, in particular, bio-naphtha is used as a feedstock for bio-plastics production or as a blending component in gasoline. Although the bio-naphtha market is not fully covered by the existing mandatory scheme, the annual growth rate of the market is projected to be 14–19%, driven by private sector demand.

3. SUSTAINABLE CERTIFICATION AND ENHANCED UTILIZATION OF SAF

3.1 ICAO has approved Sustainability Certification Schemes (SCS) for SAF under the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) framework. Across different regions and countries, mandatory programs and incentive-based mechanisms for biofuels, including SAF, are being implemented in conjunction with recognized sustainability certification systems.

3.2 Sustainability certification is an essential requirement for ensuring the environmental integrity of fuels, with the primary focus being the sustainability of the feedstock. The chain of custody in the SAF sustainability certification system is based on the mass balance approach, in which the sustainability of the feedstock and each stage of production is evaluated, and sustainable credits are distributed among the resulting products. In this process, transparency and credibility in the attribution of sustainable credits across products are critical components.

3.3 However, under the CORSIA sustainability certification system, co-products generated during the production of CORSIA-eligible SAF are, in practice, treated in the market as conventional petroleum-derived products, despite being recognized as renewable fuels under other certification schemes.

3.4 As the CORSIA framework does not recognize the sustainability of co-products other than CORSIA SAF, producers complying with the scheme have no basis for obtaining recognition of the sustainability of their co-products and face a lack of compatibility with other international systems that grant sustainability credits to these co-products. Consequently, they are more likely to prioritize the production of SAF under schemes where the sustainability of co-products can be recognized, rather than producing CORSIA-eligible SAF.

4. DISCUSSION

4.1 Projections for SAF production across various regions and countries indicate a sharp upward trend, which will also lead to an increase in SAF co-products. Considering the high production cost of SAF, it is essential that these co-products are valued appropriately in the market to ensure the overall economic viability of SAF production.

4.2 Given the current limitations in the availability of SAF feedstocks, it is necessary to examine the compatibility among certification systems to enable sustainably sourced feedstocks to be utilized across a variety of fuel products. Such harmonization could also contribute positively to securing SAF supply volumes.

4.3 Therefore, the current and future certification frameworks, whether established by ICAO Member States or other international bodies, should consider the possibility of co-products being utilized under other national or regional schemes. Furthermore, it would be desirable for CORSIA to also allow co-products derived from CORSIA-eligible SAF to be used in other industrial sectors.

4.4 Facilitating the global use of SAF co-products would not only support the early-stage scaling of SAF supply but also contribute to achieving carbon neutrality in other sectors.

— END —